

CLAIMS

1. A coated stainless steel strip product with an evenly distributed layer on one side or both sides of said strip characterized in that said layer has a decorative appearance, the thickness of said layer is maximally 10 µm, the tolerance of said layer is maximally +/- 30% of the layer thickness, the parameter value of L*, a*, b* is respectively 0< L* <95 , -66< a* <64, -90< b* <70, the tolerance of said decorative appearance as expressed in terms of ΔE is maximally 15 and that the layer has such a good adhesion so that the coated steel strip when tested in soft-annealed condition can be bent more than 90 ° over a radius maximally equal to 5*t, where t is the thickness of said strip, without showing any tendency to flaking or the like.

2. Product according to claim 1 characterized in that the thickness of the strip substrate is between 0,015 mm and 3,0 mm

3. Product according to claim 1 or 2 characterized in that the ratio between the thickness of the coating and the thickness of the strip is max 7%.

4. Product according to any of claims 1-3, characterized in that it is made of a substrate of ferritic stainless steel, austenitic stainless steel, stainless spring steel, duplex stainless steel, hardenable chromium steel or precipitation hardenable stainless steel.

5. Product according to any of the preceding claims 1-4 characterized in that the substrate material in soft-annealed condition has a tensile strength of maximum 1400 MPa.

6. Product according to any of the claims 1-4 characterized in that the substrate material in cold-rolled condition has a tensile strength of minimum 500 MPa.

7. Product according to any of the claims 1-4 characterized in that the substrate material in hardened and/or tempered condition has a tensile strength of minimum 1000 MPa.

5 8. Product according to any of claims 1-7, characterized in that the coating is a binary metal oxide or a ternary metal oxide or mixtures or solid solutions of said binary metal oxides, the main ingredient in such a mixture or solid solution being Al_2O_3 , TiO_2 or Cr_2O_3 .

10 9. Product according to any of claims 1-7, characterized in that the coating is a coating of metal carbides or metal nitrides, preferably TiN, TiAlN, ZrN, TiC, or CrN, or mixtures thereof.

15 10. Product according to claim 9 subsequently heat-treated in a tempering or a hardening process using a suitable gas atmosphere, characterized in that the difference of the decorative appearance of the coating after the heat-treatment compared to before the heat-treatment as expressed in terms of ΔE is maximally 15.

20 11. Product according to claim 10 characterized in that the material after the subsequent heat-treatment has a tensile strength of more than 1000 MPa.

25 12. Product according to any of preceding claims, characterized in that the layer has a multi-layer constitution of up to 10 layers.

13. Product according to claim 12 characterized in that each individual layer has a thickness of between 0,01 to 10 μm .

30 14. Product according to claim 13, characterized in that the layer has a multi-layer constitution of individual layers of different coatings of nitrides or carbides such as TiN and TiC, and if desired also in combination with layers of oxides in the form of Cr_2O_3 or Al_2O_3 or TiO_2 , or mixtures thereof.

15. Product according to claim 14, *characterized in that* there is also at least one covering layer of nickel or chromium or aluminum or titanium in thickness up to 2 μm .

16. Product according to any of claims 1-7 with a
5 desired decorative appearance achieved by using a two-step method with a coating applied in the first step and a subsequent processing done in the second step to achieve a desired colour, *characterized in that* the coating in the first step is a suitable covering layer of a metal such as
10 aluminum, chromium, titanium, zirconium or a binary oxide of said metal such as Al_2O_3 , TiO_2 , Cr_2O_3 , or mixtures of said metal and said binary oxide.

17. Product according to claim 16 *characterized in that* the material after the subsequent processing in the second-
15 step has a tensile strength of more than 1000 MPa.

18. Product according to any of claim 16-17
characterized in that the desired colour is achieved by incorporating a suitable element such as oxygen, carbon, nitrogen into the coating applied in the first step, by
20 using a reactive gas during a suitable heat-treatment.

19. Product according to any of claims 16-18
characterized in that the final product after the second step has a coating with a desired colour consisting of metal oxide, metal nitride, metal carbide, or a mixture such as
25 metal oxy-nitride, metal oxy-carbide or metal carbo-nitride.

20. Product according to any of claims 16-19
characterized in that the layer has a multi-layer constitution of up to 10 layers.

30 21. Product according to any of claims 16-20 *characterized in that* each individual layer has a thickness of between 0,01 to 10 μm .

22. Product according to any of the preceding claims 1-
21 *characterized in* a decorative appearance of a typical a

blue colour of normally $20 < L^* < 95$, $-66 < a^* < 64$ and $-83 < b^* < 0$.

23. Product according to any of the preceding claims
1-21 characterized in a decorative appearance of a typical
5 a green colour of normally $20 < L^* < 95$, $-66 < a^* < 0$ and $-83 < b^* < 70$.

24. Product according to any of the preceding claims
1-21 characterized in a decorative appearance of a
typical a red colour of normally $20 < L^* < 95$, $0 < a^* < 64$
10 and $-40 < b^* < 35$.

25. Product according to any of the preceding claims
1-21 characterized in a decorative appearance of a
typical golden colour of normally $20 < L^* < 95$, $-66 < a^* < 64$
and $0 < b^* < 70$.

26. Product according to any of the preceding
claims 1-21 characterized in a decorative appearance of a
typical black colour of $0 < L^* < 50$, $-20 < a^* < 20$ and $-20 < b^* < 20$.

27. Product according to any of the preceding
claims 1-21 characterized in a decorative appearance of a
typical violet colour of normally $20 < L^* < 95$, $20 < a^* < 60$
and $-25 < b^* < -60$.

28. A product according to any of the preceding claims
1-27, characterized in that it is suitable for cost
25 efficient and productive manufacturing of consumer
related applications, such as outdoor life applications,
sports and sea-life applications, household applications,
camera applications, mobile phones and other telecom
applications, edge applications such as knife, saw and
30 shaving applications or the like, and applications for
personal belongings and care such as watches, glasses,
cosmetic applications, buttons and zippers in clothing,
perfume bottles or the like.

29. Method of manufacturing a coated stainless steel strip product according to any of the preceding claims 1-28, *characterized in that* said product is produced in a continuous roll-to-roll process with a minimum strip speed of 3 m/min, included in a strip production line using sputtering and/or electron beam evaporation comprising an etch chamber in-line.